CURRENT LISTING OF CLAIMS

We claim:

1. (canceled)

2. (previously amended) The method of Claim 10, wherein R^1 is a solid support.

3. (original) The method of Claim 2, wherein R^2 is a nitrogen protecting group.

4. (original) The method of Claim 2, wherein the reducing agent is selected from the group consisting of:
   CrX_2, wherein each X is independently halide, and
   a mixture of 1,1'-dialkyl-4,4'-bipyridinium dihalide and a thiosulfate compound.

5. (previously amended) The method of Claim 4, wherein the nitro reducing step (a) is done in the presence of a protic solvent.

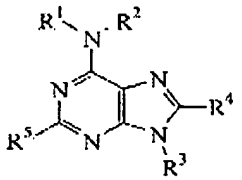
6. (previously amended) The method of Claim 4, wherein the 4,5,6-triaminopyrimidine produced in said step (a) contains less than 10 mole percent of inorganic salts.

7. (currently amended) The method of Claim 4, wherein more than 90 mole percent of the solid support-bound pyrimidine ring remains bound to the solid support during said nitro group reducing step [[(f)]] (e).

8. (original) The method of Claim 2 further comprising cleaving the substituted purine from the solid support to produce the purine compound where R^1 is hydrogen.

9. (currently amended) The method of Claim 10, wherein the cyclizing agent is an orthoester, ~~an~~ a carboxylic acid anhydride, an acyl halide, a mixture of isothiocyanate and an oxidizing agent, a mixture isocyanate and an oxidizing agent, or a mixture of an aldehyde and an oxidizing agent.

10. (currently amended) A method for producing a substituted purine compound of the formula:



wherein

R^1 is a solid support, hydrogen, alkyl, cycloalkyl, or aryl;

R^2 is alkyl, cycloalkyl, aryl, or a nitrogen protecting group;

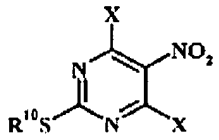
R^3 is hydrogen, alkyl, cycloalkyl, aryl, or a nitrogen protecting group;

R^4 is hydrogen, alkyl, aryl, or NR^6R^7, where each of R^6 and R^7 is independently hydrogen, alkyl, aryl, or cycloalkyl; and

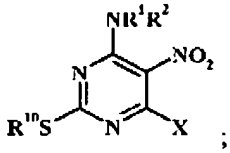
R^5 is alkyl, alkoxy, alkenyl, alkynyl, aryl, aryloxy, cycloalkyl, cycloalkoxy, alkylthiol, arylthiol, or $-NR^8R^9$, where each of R^8 and R^9 is independently hydrogen, alkyl, cycloalkyl, aryl, or a nitrogen protecting group, or R^8 and R^9 together with the nitrogen atom to which they are attached to form a heterocycle nonaromatic cyclic moiety of 3 to 8 atoms in which one ring atom is a nitrogen and a second ring atom is optionally a NR^{10} (where R^{10} is hydrogen or C_{1-6} alkyl), O or $S(O)_n$ (where n is an integer from 0 to 2), the remaining ~~remaining~~ ring atoms being C, where one or two C atoms may be optionally ~~replace~~ replaced by a carbonyl group;

said method comprising:

(a) contacting a 4,6-dihalo-5-nitro-2-thioether pyrimidine of the formula wherein R^{10} is alkyl, cycloalkyl, or aryl and each X is independently halide:

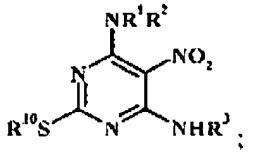


with a first amine compound of the formula HNR^1R^2 to produce a 6-aminopyrimidine of the formula:



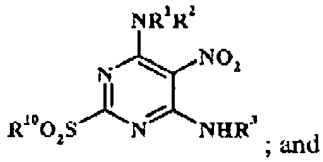
;

(b) contacting the 6-aminopyrimidine with a second amine compound of the formula H_2NR^3 to produce a 4,6-diaminopyrimidine of the formula:



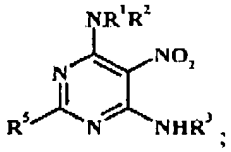
;

(c) contacting the 4,6-diamino pyrimidine with an oxidizing agent to produce a 2-sulfonylpyrimidine of the formula:



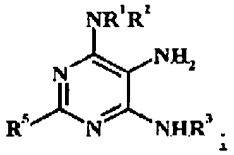
; and

(d) contacting the 2-sulfonylpyrimidine with a nucleophile of the formula $R^5 \cdot M$ wherein M is hydrogen, alkali metal, ~~or a cuprate~~ copper or ~~a magnesium metal complex~~ MgX wherein X is a halide to produce a 5-nitropyrimidine compound of the formula,



;

~~(c)~~ contacting the 5-nitropyrimidine compound with a reducing agent to produce a 4,5,6-triaminopyrimidine of the formula:



and,

(f) forming a purine ring by contacting the 4,5,6-triaminopyrimidine with a cyclizing agent to produce the substituted purine compound.

11-22. (canceled)

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